

PATENT SPECIFICATION

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(54) HINGE BEARING

(71) We, REGIE NATIONALE DES USINES RENAULT and AUTOMOBILES PEUGOT, both French Bodies Corporate of 8 Rue Emile Zola, 92100 Billancourt, France and 75 Avenue de la Grande Armee, 75016-Paris, France, respectively, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed to be particularly described in and by the following statement:—

The present invention relates to a device for attaching and locking a bearing.

In order to hinge control levers, such as an automobile accelerator control pedal lever, bearings are used which are fixed in a positive manner onto any support component whatsoever, for example a plate or a part of the vehicle bodywork.

It is known especially for a bearing to be fixed to its support component by way of screws and nuts which are prevented from working loose by either a friction washer, a lock nut or a small tab washer, and these solutions are expensive taking into account the assembly time and the number of necessary parts.

In the particular case of a hinge-bearing of an accelerator pedal lever, two operatives are required in order to attach the bearing.

In order to overcome these disadvantages the present invention aims to provide a bearing which is attached very easily by a single operative onto a supporting component which has at least two orifices.

According to the present invention there is provided a hinge bearing for receiving the hinge pin of a lever and adapted to be secured to a support component having at least two orifices, such bearing comprising: at least one first hook firmly fixed to a first part of the bearing; at least one further hook fixed firmly to a second

flexible part of the bearing; and at least one recess so disposed in relation to said at least one further hook that the said at least one recess diminishes in cross sectional area on deformation of said flexible part of the bearing to pivot said at least one further hook in a direction to withdraw the tip of said at least one further hook; whereby once the hooks have been engaged in orifices of such a support component by deformation of the said flexible part which then springs back to hold the hooks engaged, a suitable locking member can be inserted into said recess to prevent inadvertent deformation of said flexible part and withdrawal of the hooks from the orifices.

This arrangement makes it possible for the hooks to click into position in the supporting component because of the elasticity of the flexible portion of the bearing.

The device according to the invention is very simple and makes it possible to place the bearing in position very rapidly, and hence to reduce the cost price.

Furthermore due to the very shape of the components, the attachment cannot work loose.

Finally, the bearing and its main attachment components form a single moulded piece into which a locking pin and/or axle can be fitted.

In order that the present invention may more readily be understood the following description is given, merely by way of example, reference being made to the accompanying drawings in which:—

Figure 1 is an exploded perspective view of the various components of a bearing according to the invention mounted on a plate;

Figure 2 is a view in side elevation of a hinge of a lever carrying a bearing according to the invention;

Figure 3 is an exploded perspective view

of another embodiment of a bearing according to the invention;

Figure 4 is an exploded perspective view of another embodiment of a bearing according to the invention.

Figures 1 and 2 show a portion of the bodywork of a vehicle in the form of a plate 1, having an orifice 2 and a pair of further orifices 3 and 3a, and to which plate a bearing 4 is to be attached. The bearing 4 consists of a rigid part 5 carrying a hook 6 which can be inserted into the orifice 2 of the plate and, secondly, of a flexible part consisting of two split lugs 7 and 7a having slits 8 and two hooks 9 and 9a which can be inserted into the further orifices 3 and 3a of the plate due to elastic deformation of the flexible part of the lugs 7 and 7a when pressure is exerted in direction of the arrow F. The face 6a of the hook 6 bears against the back of the plate 1 whilst the grooves 10 of the hooks 9 and 9a fit over the rims of the orifices 3 and 3a.

The lugs 7 and 7a, which together form a yoke, contain bores 11 and 11a into which a resilient tubular pin or spindle 12 of rolled iron strip, having a longitudinal slit 13, can be inserted to define pivot axis $\alpha\beta$. This pin 12 which is inserted into the bores 11 and 11a when the hooks 6, 9 and 9a respectively, are mounted in the orifices 2, 3 and 3a prevents any deformation of the lugs 7 and 7a and ensures that the hooks are locked in their orifices as well as that the bearing 4 is firmly fixed in a positive manner to the plate 1.

The pin 12, in the part between the lugs 7 and 7a carries a ring 14, firmly fixed to a lever 15, so that it can pivot such that the pin 12 simultaneously plays the role of the locking component of the bearing 4 and the pivot pin of the hinge.

The pin 12 is preferably a force fit to the ring 14 and pivots with a desired functional clearance in the bores 11 and 11a of the lugs 7 and 7a.

Figure 3 represents another embodiment of the bearing 4 in which a rigid part 5 equipped with a hook 6 is extended by two tabs 16 and 16a having bores 17 and 17a intended to receive a pivot pin 25 (shown in broken lines) which will carry a sleeve 14 firmly fixed to a lever.

The tabs 16 and 16a are extended by flexible parts 18 and 18a carrying hooks 9 and 9a and delimiting recesses 19 and 19a into which a resilient tubular locking pin 12 can be inserted to prevent closing up of the part cylindrical recesses 19 and 19a thereby locking the hooks 9, 9a against upward movement.

Thus, as in the preceding example, the pin 12 limits deformation of the flexible parts 18 and 18a and ensures that the

hooks are locked in the orifices of the plate.

In this embodiment however, the locking component 12 is separate from the pivot pin 25.

Figure 4 shows yet a further embodiment shaped differently from the bearing shown in Figure 3 but operating in a similar way. Like reference numerals denote like parts in Figures 3 and 4.

If desired several hooks 6 may be provided, and equally it is possible to provide only one further hook (either 9 or 9a) and one lug 7 or 7a with any appropriate configuration for sleeve(s) 14. Equally the hook 6 may itself be flexibly mounted on the bearing and provided with its own locking members if desired. These and other possible variations falling within the scope of the following claims are well within the ability of the expert in this art.

WHAT WE CLAIM IS:

1. A hinge bearing for receiving the hinge pin of a lever and adapted to be secured to a support component having at least two orifices, such bearing comprising: at least one first hook firmly fixed to a first part of the bearing; at least one further hook firmly fixed to a second flexible part of the bearing; and at least one recess so disposed in relation to said at least one further hook that the said at least one recess diminishes in cross sectional area on deformation of said flexible part of the bearing to pivot said at least one further hook in a direction to withdraw the tip of said at least one further hook; whereby once the hooks have been engaged in orifices of such a support component by deformation of the said flexible part which then springs back to hold the hooks engaged, a suitable locking member can be inserted into said recess to prevent inadvertent deformation of said flexible part and withdrawal of the hooks from the orifices.

2. A hinge bearing according to claim 1, wherein the first and further hooks face away from each other and said at least one recess is arranged to diminish in cross section as the further hook or hooks is or are pushed towards the first mentioned hook or hooks.

3. A hinge bearing according to claim 1 or 2, wherein said first bearing part on which the first mentioned hook or hooks is or are formed is a rigid part of the bearing.

4. A hinge bearing according to claim 3, wherein the rigid part of the bearing comprises a single first mentioned hook whilst the flexible part has two hooks arranged parallel to one another and spaced from the first mentioned hook of the rigid part.

5. A hinge bearing according to any one of the preceding claims, and including a locking member shaped to engage in said at least one recess to prevent diminution of the recess cross-sectional area.
6. A hinge bearing according to claim 5, wherein said locking member is a pin formed of rolled iron strip, and there are two of said recesses in coaxial relationship and each comprising a slit bore of the bearing.
7. A hinge bearing according to claim 5 or 6, and further including a control lever secured to a sleeve which is mounted on the locking pin between said lugs.
8. A hinge bearing according to claim 7, wherein the locking pin is a force fit in the sleeve and pivots freely with a desired clearance in the bores of the lugs.
9. A hinge bearing according to claim 7 or 8, wherein the locking pin is a resilient tube of rolled sheet metal.
10. A hinge bearing according to claim 3 or 4, or to claim 5 or 6, when appendant to claim 3 or 4, wherein said rigid part of the bearing includes two tabs which have bores for receiving a hinge pin, the said tabs further being extend to form two flexible components carrying two of said further hooks and delimiting recesses adapted to receive said locking member.
11. A hinge bearing for pivotally mounting a lever onto a support component, such bearing being substantially as hereinbefore described with reference to, and as illustrated in, Figures 1 and 2, or Figure 3, or Figure 4 of the accompanying drawings.

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Fig.1

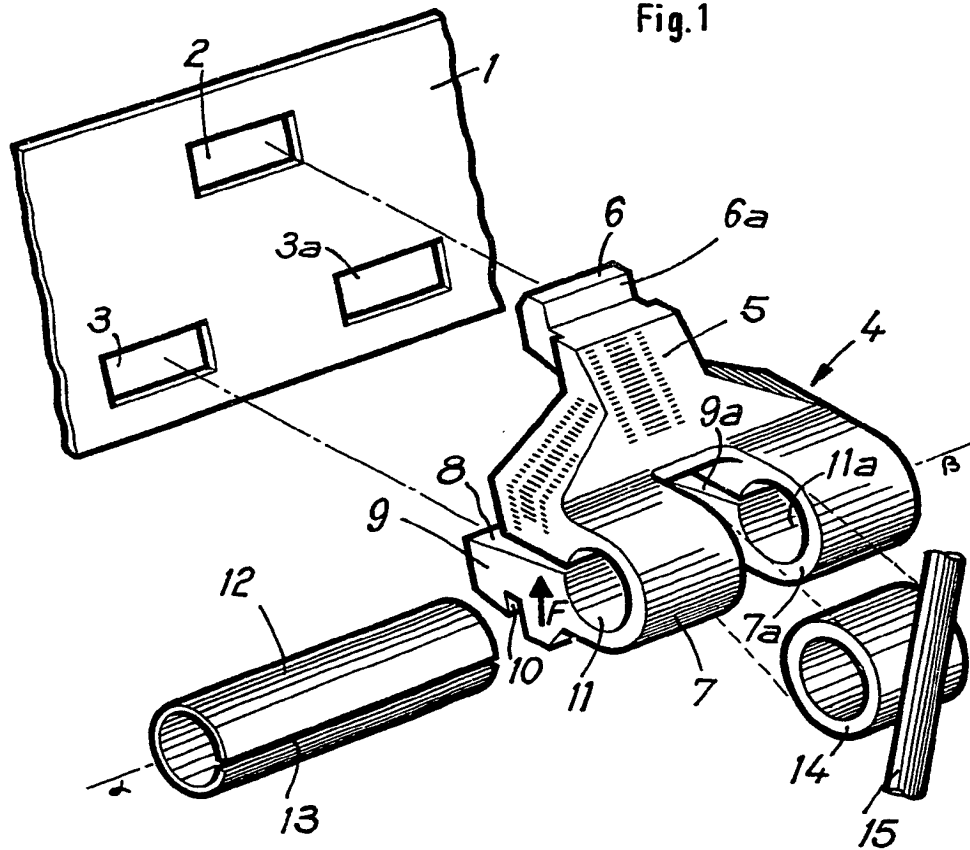


Fig.3

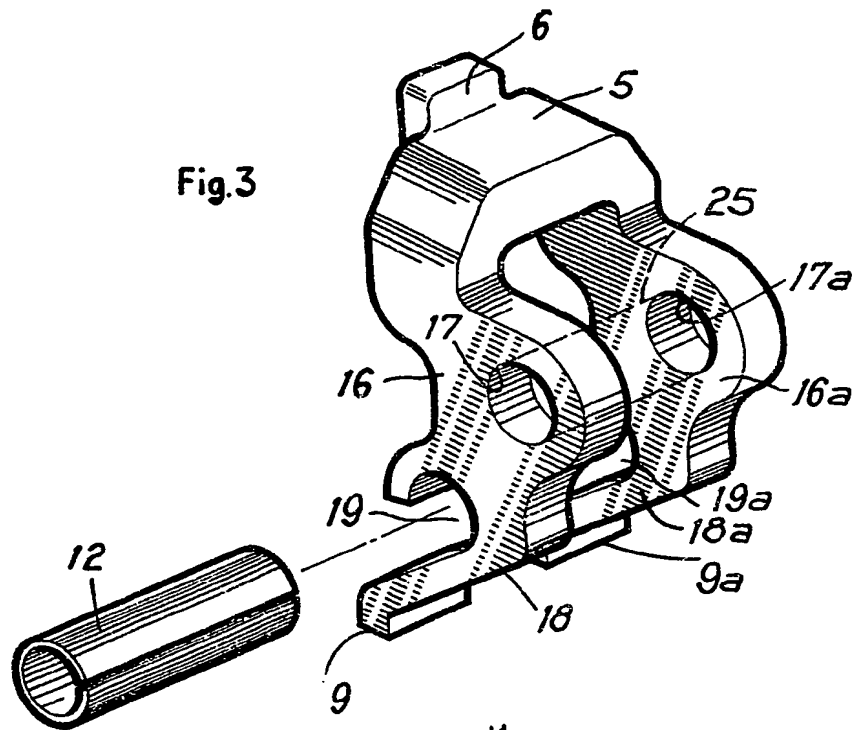
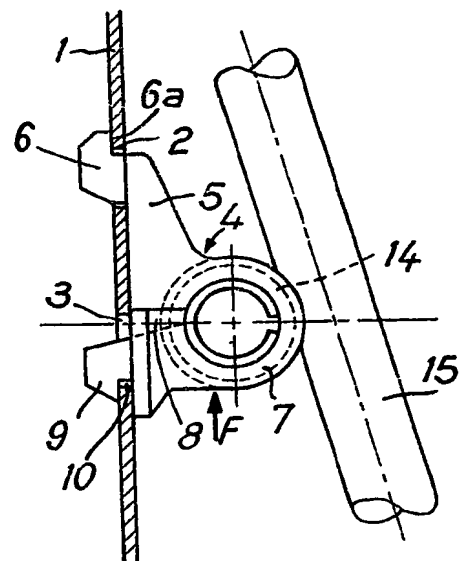


Fig.2



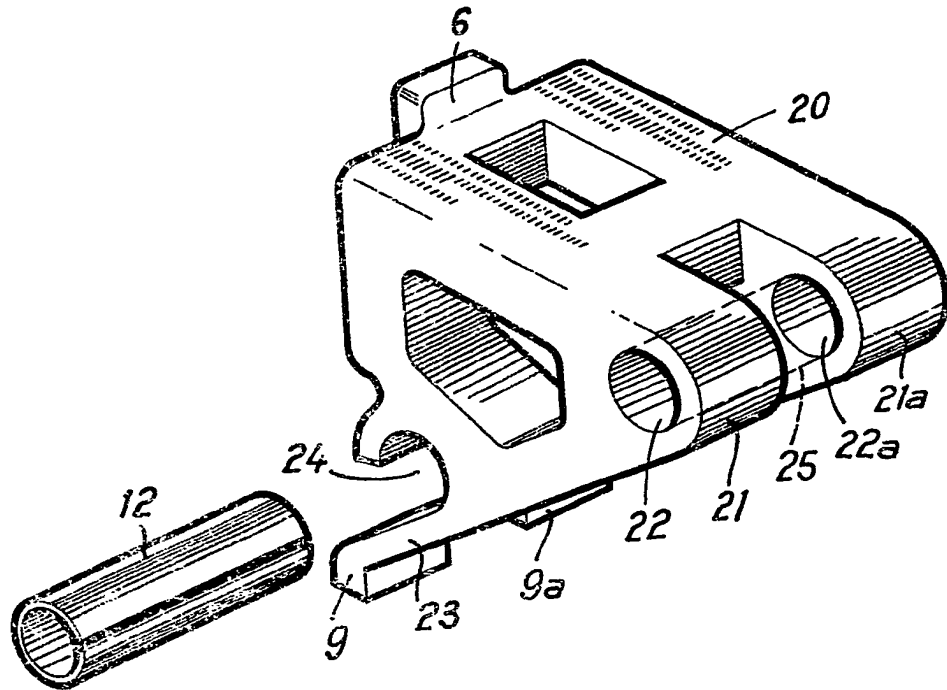


Fig. 4